

US EPA ARCHIVE DOCUMENT

**Data Evaluation Report on the terrestrial field dissipation of BAS 510 F**

PMRA Submission Number {.....}

EPA MRID Number 45405220

**Data Requirement:** PMRA DATA CODE:  
EPA DP Barcode: D278387  
OECD Data Point:  
EPA Guideline: 164-1

**Test material:** BAS 510 .. F

**End Use Product name:** Not specified  
**Formulation type:** Wettable granule

**Concentration of a.i.:** 69.6%

**Active ingredient**

**Common name:**

**Chemical name:**

IUPAC: 2-Chloro-*N*-(4'-chlorobiphenyl-2-yl)-nicotinamide.

CAS name: 2-Chloro-*N*-(4-chloro[1,1'-biphenyl]-2-yl)-3-pyridinecarboxamide.

CAS No: 188425-85-6.

Synonyms: Nicobifen, ~~BAS 516 02 F~~

SMILES string:

**Primary Reviewer:** Dan Hunt  
Dynamac Corporation

**Signature:** *Dan Hunt*  
**Date:** 1/14/02

**QC Reviewer:** Joan Harlin  
Dynamac Corporation

**Signature:** *Joan L Harlin*  
**Date:** 1/14/02

**Secondary Reviewer:** Cheryl Sutton  
EPA

**Signature:** *Cheryl Sutton*  
**Date:** 4/02

**Company Code:**

**Active Code:**

**Use Site Category:**

**EPA PC Code:** 128008

**CITATION:** Jackson, S., M. Saha, and J. McDonell. 2001. 1999 Field dissipation of BAS 510..F in row crop use patterns. BASF Study No. 46699. BASF Reg. Doc. No. 2001/5000936. Unpublished study performed by Research For Hire, Porterville, CA, Smith Biological Services, Payette, ID, Research Options, Winter Garden, FL, and BASF Corporation, Research Triangle Park, NC, and sponsored by BASF Corporation, Research Triangle Park, NC. Study initiated March 8, 1999 and completed February 27, 2001.



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### EXECUTIVE SUMMARY:

Soil dissipation/accumulation of BAS 510 F under US field conditions was conducted in bareground plots in California, Idaho, and Florida (ecoregions were not reported). The experiment was carried out in accordance with the US EPA Pesticide Assessment Guidelines Subdivision N, 164-1 and in compliance with the US EPA FIFRA (40 CFR, Part 160) GLP standard. For each test plot, BAS 510 F was broadcast six times (7-day interval) at target rates of 0.41 kg a.i./ha (applications 1-4) and 0.62 kg a.i./ha (applications 5-6) in 6.1 x 30.4 m, 3.6 x 31.0 m, or 3.6 x 34.7 m sampling plots. The applied rate corresponds to 100% of the proposed label rate. Rainfall was supplemented with irrigation to reach the 10- or 30-year average rainfall. The treated plots were 1.5-5.8 m apart, and the control plots were >17 m away from the nearest treated plot at each field site.

The application rate was verified for applications 1, 3 and 6 in the test plots at each test site. Prior to each designated application, fifteen Petri dishes with soil were placed in the plots to confirm the application rate. The mean recoveries from the field application monitors placed in the test plots were 90-101%, 87-106% and 79-96% of the target for the California, Idaho and Florida test plots, respectively (data are reported as ranges of the mean recoveries from applications 1, 3 and 6). Field spiking of the samples was done by fortifying control soil from each test site with BAS 510 F at approximately 0.85 µg/g. The mean recoveries of BAS 510 F from the field spiked samples (across all fortification events) were  $96 \pm 6.7\%$ ,  $87 \pm 5.7\%$ , and  $97 \pm 5.7\%$  of the applied for the samples fortified at the California, Idaho, and Florida field sites, respectively.

Soil samples were taken prior to and following all six applications, at 1, 2, 3, and 5 days following the first application, and at approximately 1, 2, 3, 5, 7, 10, 14, 21, 30, 60, 90, 120, 180, 300, 360, and 450 days (Florida site only) following the sixth application to a depth of 0 - 120 cm. The soil samples were extracted by shaking with methanol followed by methanol:water (50:50, v:v), diluted with water with 0.1% formic acid and 4 mM ammonium formate and analyzed for BAS 510 F and the degradates 2-chloronicotinic acid (M510F47) and 2-hydroxy-N-(4'-chlorobiphenyl-2-yl)nicotinamide (M510F49) by HPLC-MS/MS. The LOQ for each analyte in soil was 0.010 mg/kg.

At the California site, the maximum measured concentration following the sixth application (day 0) was 0.32 mg a.i./kg soil (after adjusting for the concentration present immediately prior to the sixth application), which is 58.2% of the applied rate (reviewer-calculated based on the registrant-calculated zero-time core concentration, 0.55 mg/kg). Following the sixth application, BAS 510 F dissipated from a maximum of 1.78 mg a.i./kg soil at day 0 (0-7.5 cm depth) to 0.83-1.20 mg a.i./kg soil by 61-272 days, and was 0.51 mg a.i./kg soil at 329 days posttreatment (the last sampling interval). BAS 510 F was only detected in the top (0-15 cm) soil layer. The transformation products 2-chloronicotinic acid (M510F47) and 2-hydroxy-N-(4'-chlorobiphenyl-2-yl)nicotinamide (M510F49) were detected at maximum concentrations of 0.04 mg/kg and 0.02 mg/kg (1.6% and 0.78% of the applied amount, respectively) observed following the sixth application in the 0-7.5 cm soil layer.

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Under field conditions at the California site, BAS 510 F had a DT50 value of 76.5 days and a DT75 value of >329 days. At the end of the 329 day period, the total carryover of residues of BAS 510 F was 19.9% of the total applied amount. However, the reported DT50 value for this site was of questionable value due to data variability. The calculated half-life of 289 days is considered to be more representative of the observed dissipation at this site.

At the Idaho site, the maximum measured concentration following the sixth application (day 3) was 0.98 mg a.i./kg soil (after adjusting for the concentration present immediately prior to the sixth application), which is 178% of the applied rate (reviewer-calculated based on the registrant-calculated zero-time core concentration, 0.55 mg/kg). Following the sixth application, BAS 510 F dissipated from a maximum of 2.77 mg a.i./kg soil at 3 days (0-7.5 cm depth) to 1.57-1.73 mg a.i./kg soil by 60-269 days (with the exception of 2.18 mg a.i./kg soil at 166 days), and was 1.32 mg a.i./kg soil at 345 days posttreatment (the last sampling interval). BAS 510 F was primarily detected in the top (0-15 cm) soil layer. The transformation products 2-chloronicotinic acid and 2-hydroxy-N-(4'-chlorobiphenyl-2-yl)nicotinamide (M510F49) were detected at maximum concentrations of 0.01 mg/kg and 0.03 mg/kg (0.39% and 1.2% of the applied amount, respectively) observed following the sixth application in the 0-7.5 cm soil layer.

Under field conditions at the Idaho site, BAS 510 F had a DT50 value of 333 days and a DT75 value of >345 days. At the end of the 345 day period, the total carryover of residues of BAS 510 F was 52.3% of the total applied amount. While the reported DT50 value for this site was of questionable value due to data variability, it appears to adequately represent the observed dissipation better than the calculated half-life of 462 days ( $r^2 = 0.57$ ); therefore, the DT50 value will be used in the fate assessment.

At the Florida site, the maximum measured concentration following the sixth application (day 1) was 0.48 mg a.i./kg soil (after adjusting for the concentration present immediately prior to the sixth application), which is 87.3% of the applied rate (reviewer-calculated based on the registrant-calculated zero-time core concentration, 0.55 mg/kg). Following the sixth application, BAS 510 F dissipated from a maximum of 1.26 mg a.i./kg soil at 1 day (0-7.5 cm depth) to 0.74-0.83 mg a.i./kg soil by 2-5 days and 0.44-0.47 mg a.i./kg soil by 30-60 days, and was 0.13 mg a.i./kg soil at 384 days posttreatment (the last sampling interval). BAS 510 F was primarily detected in the 0-30 cm soil layer. The transformation product 2-hydroxy-N-(4'-chlorobiphenyl-2-yl)nicotinamide (M510F49) was detected at a maximum concentration of 0.02 mg/kg (0.78% of the applied amount) observed following the sixth application in the 0-7.5 cm soil layer.

Under field conditions at the Florida site, BAS 510 F had a DT50 value of 27 days and a DT75 value of >384 days. At the end of the 384 day period, the total carryover of residues of BAS 510 F was 11.9% of the total applied amount.

The major routes of dissipation of BAS 510 F under terrestrial field conditions at California, Idaho, and Florida could not be determined from the data provided in this report. Leaching was minimal and the major transformation products did not show a pattern of accumulation. Volatilization and runoff were not measured. Based on laboratory studies that demonstrated that the transformation of BAS 510 F resulted primarily from bound residue and CO<sub>2</sub> formation, it is

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assumed that these were also the predominant dissipation processes in the field. However, the reported DT50 values for the California and Idaho test sites were of questionable value due to temporal and inter-replicate data variability. At the California test site, for which a DT50 value of 76.5 days was reported, the parent compound was present at >50% of the applied (following the final application) through 272 days posttreatment. The calculated half-life of 289 days is considered to be more representative of the observed dissipation at that site. At the Idaho site, for which a DT50 value of 333 days was reported, the parent compound was present at >50% of the applied (following the final application) in at least one of the replicates through 345 days posttreatment. For that site, however, the DT50 value appears to adequately represent the observed dissipation better than the calculated half-life of 462 days ( $r^2 = 0.57$ ); therefore, the DT50 value will be used in the fate assessment.

### RESULTS SYNOPSIS

Location/soil type: Tulare County, California/Cajon fine sandy loam soil series

Half-life: 289 days

DT50: 76.5 days (of questionable value due to data variability)

DT75: >329 days

Major transformation products detected: 2-chloronicotinic acid (M510F47) and 2-hydroxy-N-(4'-chlorobiphenyl-2-yl)nicotinamide (M510F49)

Dissipation routes: Could not be determined

Location/soil type: Payette County, Idaho/Haw loam soil series

DT50: 333 days

DT75: >345 days

Major transformation products detected: 2-chloronicotinic acid (M510F47) and 2-hydroxy-N-(4'-chlorobiphenyl-2-yl)nicotinamide (M510F49)

Dissipation routes: Could not be determined

Location/soil type: Orange County, Florida/Candler fine sand soil series

DT50: 27 days

DT75: >384 days

Major transformation products detected: 2-hydroxy-N-(4'-chlorobiphenyl-2-yl)nicotinamide (M510F49)

Dissipation routes: Could not be determined

**Study Acceptability:** This study is classified as acceptable and partially satisfies the guideline data requirement for a terrestrial field dissipation study.

### I. MATERIALS AND METHODS

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**GUIDELINE FOLLOWED:** The study was conducted according to U.S. EPA Pesticide Assessment Guidelines Subdivision N, 164-1. The study did not deviate from EPA Subdivision N 164-1.

**COMPLIANCE:** The study was conducted in compliance with U.S. EPA FIFRA (40 CFR Part 160) Good Laboratory Practice standards. Signed and dated GLP Compliance and No Data Confidentiality statements were provided.

## **A. MATERIALS:**

**1. Test Material** BAS 510 F

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## Chemical Structure of the active ingredient(s):

**Description:** Wettable granule

**Storage conditions of test chemicals:** Storage conditions ranged from 2.2 to 38.9°C from receipt of the test substance until last use (all sites).

## Physico-chemical properties of the active ingredient(s): BAS 510 F

Parameter	Values	Comments
Water solubility	4.63 mg/L	Temperature not reported
Vapour pressure/volatility		
UV absorption		
pKa		
K <sub>ow</sub> /log K <sub>ow</sub>		
Stability of Compound at room temperature		

Data obtained from Appendix C, p. 149 of the study report.

**2. Test site:** The test sites were located in California, Idaho, and Florida (p. 12). The California test site was located near Porterville, in Tulare County, and is representative of western irrigated agriculture and is one of the most productive vegetable and field crop regions. The Idaho test site was located near Payette, in Payette County, and is representative of the northwest crop growing region which is also a significant row/field/vegetable producing area. The Florida test site was located near Winter Garden, in Orange County, and is representative of the southeast crop region which is also a significant row/field/vegetable production area. The California test plot had previously been treated with Roundup Ultra and DDVP 2-E in the past three years; the Idaho test plot had previously been treated with Betamix Progress 1.8EC, BAS 656 07 H, Thiolux 80 DF, Comite, BAS 635 00H, and Roundup Ultra in the past three years; and the Florida test plot had not previously been treated with pesticides in the past three years (Appendix B, Tables X-XII, pp. 82-83, 92-93, 102).

Table 1: Geographic location, site description and climatic data at the study site(s).

Details		California	Idaho	Florida
Geographic coordinates	Latitude	Not available	Not available	Not available
	Longitude	Not available	Not available	Not available
	Province/State	Tulare County, CA	Payette County, ID	Orange County, FL
	Country	US	US	US

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Details		California	Idaho	Florida
	Ecoregion	Not available	Not available	Not available
Slope Gradient		<1%	<1%	0-5%
Depth to ground water (m)		77.5 m	>1.5 m	>2 m
Distance from weather station used for climatic measurements		On-site	On-site	Approximately 1.5 miles
Indicate whether the meteorological conditions before starting or during the study were within 30 year normal levels (Yes/No). If no, provide details.		Precipitation plus irrigation equalled 253% of the historical average.	Precipitation plus irrigation equalled 133% of the historical average.	Precipitation plus irrigation equalled 199% of the historical average.
Other details, if any				

Data obtained from Tables VIII-X, pp. 46-48, and Appendix B, pp. 80-82, 92, 102, in the study report.

Table 2: Site usage and management history for the previous three years.

Use	Year	California	Idaho	Florida
Crops grown	Previous year	Bareground	Potato	Not available
	2 years previous	Bareground	Spring wheat	Not available
	3 years previous	Peppers and tomato	Fallow	Not available
Pesticides used	Previous year	Roundup Ultra	Betamix Progress 1.8EC, BAS 656 07 H, Thiolux 80 DF, and Comite	None
	2 years previous	Roundup Ultra and DDVP 2-E	BAS 635 00H and Roundup Ultra	None
	3 years previous	None	Roundup Ultra	None
Fertilizers used	Previous year	Not available	Not available	Not available
	2 years previous	Not available	Not available	Not available
	3 years previous	Not available	Not available	Not available
Cultivation methods, if provided ( eg., Tillage)	Previous year	Not available	Not available	Not available
	2 years previous	Not available	Not available	Not available
	3 years previous	Not available	Not available	Not available
Other details, if any	Previous year			
	2 years previous			
	3 years previous			

Data obtained from Appendix B, Tables X-XII, pp. 82-83, 92-93, 102, in the study report.



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## **3. Soils:**

Table 3: Properties of the soil from California.

Property	Depth (cm)							
	0-15	15-30	30-45	45-60	60-75	75-90	90-105	105-120
Textural classification	sandy loam							
% sand	60	60	60	62	62	64	62	64
% silt	32	32	34	30	28	30	30	28
% clay	8	8	6	8	10	6	8	8
pH (1:1 soil:water or other)	8.9	9.1	9.4	9.7	9.8	9.8	9.6	9.9
Total organic carbon (%)								
Total organic matter (%)	0.8	0.4	0.2	0.1	0.2	0.1	0.3	0.2
CEC (meq/100 g)	9.4	10.8	11.3	11.7	12.2	11.7	11.5	11.8
Bulk density (g/cm3)	1.53-1.57	1.51-1.59	1.46-1.61	1.44-1.56	1.45-1.53	1.45-1.51	1.35-1.51	1.21-1.14
Moisture at 1/3 atm (%)	14.6	17.4	16.0	14.8	15.4	14.4	14.6	13.9
Taxonomic classification (e.g., ferro-humic podzol)	Mixed, Thermic Typic Torripsammments							
Soil mapping unit	Not provided (Cajon soil series)							
Others								

Data obtained from p. 12, and Table VIII, p. 46 in the study report.

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Table 4: Properties of the soil from Idaho.

Property	Depth (cm)							
	0-15	15-30	30-45	45-60	60-75	75-90	90-105	105-120
Textural classification	loam			silt loam			loam	clay loam
% sand	30	30	30	34	32	40	40	40
% silt	46	44	48	60	62	52	40	32
% clay	24	26	22	6	6	8	20	28
pH (1:1 soil:water or other)	6.4	7.0	7.4	7.6	7.8	7.9	8.1	8.2
Total organic carbon (%)								
Total organic matter (%)	2.6	1.5	0.6	0.4	0.4	0.3	0.3	0.3
CEC (meq/100 g)	21.2	21.1	29.5	38.2	35.8	37.8	33.5	31.3
Bulk density (g/cm <sup>3</sup> )	1.06-1.29	1.24-1.41	1.21-1.26	1.19-1.45	1.14-1.48	1.40-1.42	1.27-1.43	1.27-1.41
Moisture at 1/3 atm (%)	33.5	34.9	41.1	43.8	41.1	41.4	40.7	37.1
Taxonomic classification (e.g., ferro-humic podzol)	Fine-loamy, mixed, mesic Aridic Calcic Argixerolls							
Soil mapping unit	Not provided (Haw soil series)							
Others								

Data obtained from p. 12, and Table IX, p. 47 in the study report.

Table 5: Properties of the soil from Florida.

Property	Depth (cm)						
	0-15	15-30	30-45	45-60	60-75	75-90	90-105
Textural classification	sand						
% sand	97	97	97	97	97	97	97
% silt	2	2	2	2	2	2	2
% clay	1	1	1	1	1	1	1
pH (1:1 soil:water or other)	7.1	7.3	7.3	7.3	7.2	7.3	7.4
Total organic carbon (%)							
Total organic matter (%)	1.8	0.8	0.4	0.2	0.2	0.1	0.1
CEC (meq/100 g)	4.2	2.7	1.5	1.5	1.4	1.4	1.5
Bulk density (g/cm <sup>3</sup> )	1.47-1.56	1.62-1.64	1.62-1.67	1.63-1.65	1.63-1.65	1.64-1.67	1.62-1.65

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Property	Depth (cm)						
	0-15	15-30	30-45	45-60	60-75	75-90	90-105
Moisture at 1/3 atm (%)	3.0	2.1	1.6	1.7	1.8	1.7	1.8
Taxonomic classification (e.g., ferro-humic podzol)	Hyperthermic, uncoated Typic Quartzipsamments						
Soil mapping unit	Not provided (Candler soil series)						
Others							

Data obtained from p. 12, and Table X, p. 48 in the study report.

## B. EXPERIMENTAL DESIGN:

### 1. Experimental design:

Table 6: Experimental design.

Details		California	Idaho	Florida
Duration of study		364 days (329 days following the last application)	380 days (345 days following the last application)	420 days (384 days following the last application)
Uncropped (bare) or cropped		Bareground	Bareground	Bareground
Control used (Yes/No)		Yes	Yes	Yes
No. of replications	Controls	3	3	3
	Treatments	3	3	3
Plot size (L x W m)	Control	6.1 x 13.7	3.6 x 12.8	1.8 x 16.4
	Treatment	6.1 x 30.4	3.6 x 31.0	3.6 x 34.7
Distance between control plot and treated plot		>304 m from the nearest treated plot	19.8 m	17.3 m
Distance between treated plots		1.5 m	4.6 m	5.8 m
Application rate(s) used (g a.i./ha)		414 g a.i./ha (applications 1-4) and 616 g a.i./ha (applications 5-6)	414 g a.i./ha (applications 1-4) and 616 g a.i./ha (applications 5-6)	414 g a.i./ha (applications 1-4) and 616 g a.i./ha (applications 5-6)
Was the maximum label rate per ha used in study? (Yes/No)		Yes	Yes	Yes
Number of applications		6	6	6

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Details		California	Idaho	Florida
Application Date(s) (dd mm yyyy)		28/7/1999, 4/8/1999, 11/8/1999, 18/8/1999, 25/8/1999, and 1/9/1999	13/7/1999, 20/7/1999, 27/7/1999, 3/8/1999, 10/8/1999, and 17/8/1999	8/6/1999, 15/6/1999, 22/6/1999, 29/6/1999, 6/7/1999, and 13/7/1999
For multiple applications, application rate at Day 0 and at each application time (mg a.i./kg soil) (assuming 7.5 cm depth and bulk density of 1.5 g/cm <sup>3</sup> )		0.37 and 0.55 mg/kg for applications 1-4 and 5-6, respectively	0.37 and 0.55 mg/kg for applications 1-4 and 5-6, respectively	0.37 and 0.55 mg/kg for applications 1-4 and 5-6, respectively
Application method (eg., spraying, broadcast etc.)		Broadcast	Broadcast	Broadcast
Type of spray equipment, if used		Tractor-mounted flat boom sprayer with flat fan 110-03 nozzles	Tractor-mounted flat boom sprayer with flat fan XR11003 nozzles	Tractor-mounted flat boom sprayer with flat fan 11004 XR nozzles
Total volume of spray solution applied/plot OR total amount broadcasted/plot		40 gal/A	40 gal/A	40 gal/A
Identification and volume of carrier (e.g., water), if used		Water	Water	Water
Name and concentration of co-solvents, adjuvants and/or surfactants, if used		None	None	None
Indicate whether the following monthly reports were submitted:				
Average minimum and maximum precipitation		Yes	Yes	Yes
Average minimum and maximum air temperature		Yes	Yes	Yes
Average minimum and maximum soil temperature		No	No	No
Average annual frost-free periods		No	No	No
Indicate whether the Pan evaporation data were submitted		No	No	No
Meteorological conditions during applications 1-6, respectively	Cloud cover	0% for all six applications	0%, 15%, 0%, 100%, 50%, and 0%	100%, 90%, 100%, 100%, 90%, and 100%
	Temperature (°C)	18.3, 31.1, 19.4, 23.3, 20.0, and 15.6	20.6, 24.4, 22.2, 23.3, 25.0, and 25.0	21.7, 27.8, 25.0, 30.0, 31.1, and 25.0

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Details		California	Idaho	Florida
	Humidity	72%, 40%, 52%, 62%, 46%, and 60%	58%, 44%, 54%, 68%, 56%, and 48%	59%, 84%, 100%, 100%, 90%, and 100%
	Sunlight (hr)	Not available	Not available	Not available
Pesticides used during study: name of product/a.i concentration: amount applied: application method:		The test plots were treated 11 times with Roundup (1%).	The test plots were treated 6 times with Roundup Ultra (1.0-4.0; units not specified) and once with Roundup Ultra plus 2,4-D (0.5 plus 0.8; units not specified).	The test plots were treated 6 times with Roundup Ultra (2-3 qt/A) and twice with Gramoxone (3 pt/A).
Supplemental irrigation used (Yes/No) If yes, provide the following details: No. of irrigation: Interval between irrigation: Amount of water added each time: Method of irrigation:		Yes, via sprinkler. The test plots received a total of 48.5 inches from irrigation (0.75-8.25 inches of water per month except during the month of February 2000 when the plots were not irrigated).	Yes, via sprinkler. The test plots received a total of 27.3 inches from irrigation (0.8-6.0 inches of water per month except during the winter months when the plots were not irrigated).	Yes, via sprinkler. The test plots received a total of 74.7 inches from irrigation (2.60-9.00 inches of water per month except during the month of June 1999 when the plots were not irrigated).
Indicate whether water received through rainfall + irrigation equals the 30 year average rainfall (Yes/No)		Yes	Yes	Yes
Were the application concentrations verified? (Briefly describe in Section 2*, if used)		Yes	Yes	Yes
Were field spikes used? (Briefly describe in Section 3 <sup>†</sup> , if used)		Yes	Yes	Yes
Good agricultural practices followed (Yes or No)		Yes	Yes	Yes
Indicate if any abnormal climatic events occurred during the study (eg., drought, heavy rainfall, flooding, storm etc.)		None	None	The plots received a total of 14+ inches of water (precipitation plus irrigation) during September 1999 and June 2000.

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Details	California	Idaho	Florida
If cropped plots are used, provide the following details: Plant - Common name/variety: Details of planting: Crop maintenance (eg., fertilizers used):	N/A	N/A	N/A
Volatilization included in the study (Yes/No) (if included, describe in Section 4 <sup>§</sup> )	No	No	No
Leaching included in the study (Yes/No) (if included, describe in Section 5 <sup>§</sup> )	Yes	Yes	Yes
Runoff included in the study (Yes/No) (if included, describe in Section 6 <sup>*</sup> )	No	No	No

Data obtained from Tables VIII-X, pp. 46-48, Appendix B, pp. 67-111, in the study report.

**\* 2. Application Verification:** The application rate was verified for applications 1, 3 and 6 at each test site using fifteen Petri dishes (100 mm) that were placed in the test plots prior to each designated application (p. 13). Each Petri dish contained approximately 10 g of sieved soil from an untreated portion of the test site. The Petri dishes were collected and composited (three dishes per composite) immediately following each application.

**<sup>1</sup> 3. Field Spiking:** Samples (20 g) of sieved (1 mm) control soil collected from each test site were fortified with 17 µg BAS 510 F solution on the sampling intervals targeting 0, 3, 7, 14, 30, 60, and 360 days following the last application (p. 14; Appendix B, p. 77). The field fortified samples were analyzed at about the same time as the corresponding soil core samples (p. 26). Field spiked samples were not prepared for the degradates 2-chloronicotinic acid and 2-hydroxy-N-(4'-chlorobiphenyl-2-yl)nicotinamide.

**§ 4. Volatilization:** Volatilization was not measured.

**<sup>1</sup> 5. Leaching:** Fifteen cores were taken from the treated plots prior to and following all six applications, at 1, 2, 3, and 5 days following the first application, and at approximately 1, 2, 3, 5, 7, 10, 14, 21, 30, 60, 90, 120, 180, 300, 360, and 450 days (Florida site only) following the sixth application to a depth of 120 cm to determine the mobility of the test substance in the soil profile (pp. 12-13, Appendix B, Table VI, p. 75). In field Time Domain Reflectometry (TDR) units were used to determine if sufficient water was applied to the test plots and to determine if compound movement correlated to recharge events (pp. 21-22).

**\* 6. Runoff:** Runoff was not studied.

**7. Supplementary Study:** Two method validation studies (MRIDs 45405225 and 45405226) and two storage stability studies (MRIDs 45405223 and 45405224) were conducted and submitted.

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EPA MRID Number 45405220

**MRID 45405225.** BASF Method D0004 "The determination of residues of BAS 510 F and its metabolites 2-chloronicotinic acid and 1-(4-chlorophenyl)-2-aminobenzene in soil using LC-MS/MS" was validated using control soil from California, Indiana, New Jersey, and Alberta, and German 2.2 soil (Appendix E, pp. 85-86). Soil samples were fortified at 0.01, 0.1, and 1.0 ppm. The method was later modified (without change to the protocol) to include the degradate 2-hydroxy-N-(4'-chlorobiphenyl-2-yl)nicotinamide and to remove 1-(4-chlorophenyl)-2-aminobenzene (BASF Method D0004/1), and was validated using control soil collected from Georgia, California, and Alberta, and German 2.2 soil.

**MRID 45405226.** BASF Method D0004/1 "The determination of residues of BAS 510 F and its metabolites 2-chloronicotinic acid and 2-hydroxy-N-(4'-chlorobiphenyl-2-yl)nicotinamide in soil using LC-MS/MS" was validated in an independent laboratory using a high clay content soil from Illinois (p. 8). Samples were fortified at 0.01 and 0.10 mg/kg.

**MRID 45405224.** A loamy sand soil from Germany was treated with diphenyl ring-labeled <sup>14</sup>C-BAS 510 F at a concentration of 0.930 mg/kg and stored frozen (-18 to -22°C) for up to 2 years prior to analysis (pp. 11-13). Samples were collected for analysis at 0, 30, 87, 181, 365, and 730 days posttreatment.

**MRID 45405223.** Soil samples (0-6 and 12-18 inch depths) were treated with BAS 510 F and the degradates 2-chloronicotinic acid and 2-hydroxy-N-(4'-chlorobiphenyl-2-yl)nicotinamide at a concentration of 0.1 ppm (p. 9). Samples fortified with BAS 510 F and 2-chloronicotinic acid were collected for analysis at day 0 and 1, 3, and 6 months posttreatment; samples collected at day 0 and 1 month were extracted and analyzed according to BASF Method D0004 and samples collected at 3 and 6 months were extracted and analyzed according to BASF Method D0004/1. Samples fortified with 2-hydroxy-N-(4'-chlorobiphenyl-2-yl)nicotinamide were collected for analysis at day 0 and 1 and 3 months posttreatment; all samples were extracted and analyzed according to BASF Method D0004/1.

### 8. Sampling:

Table 7: Soil sampling.

Details	California	Idaho	Florida
Method of sampling (random or systematic)	Random	Random	Random
Sampling intervals	Prior to and following all six applications, at 1, 2, 3, and 5 days following the first application, and at 1, 2, 3, 5, 7, 10, 14, 21, 30, 61, 90, 120, 181, 272, and 329 days following the sixth application	Prior to and following all six applications, at 1, 2, 3, and 5 days following the first application, and at 1, 2, 3, 5, 7, 10, 14, 21, 30, 60, 90, 166, 186, 269, and 345 days following the sixth application	Prior to and following all six applications, at 1, 2, 3, and 5 days following the first application, and at 1, 2, 3, 5, 7, 10, 14, 21, 30, 60, 91, 120, 180, 270, 360, and 384 days following the sixth application

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Details	California	Idaho	Florida
Method of soil collection (eg., cores)	Cores	Cores	Cores
Sampling depth	120 cm	120 cm	120 cm
Number of cores collected per plot	15 (5 per replicate)	15 (5 per replicate)	15 (5 per replicate)
Number of segments per core	Nine	Nine	Nine
Length of soil segments	7.5 cm (0-15 cm depth) and 15 cm (15-120 cm depth)	7.5 cm (0-15 cm depth) and 15 cm (15-120 cm depth)	7.5 cm (0-15 cm depth) and 15 cm (15-120 cm depth)
Core diameter (Provide details if more than one width)	Minimum 4 inch diameter (0-15 cm depth samples) and unspecified diameter (15-120 cm depth samples)	Minimum 4 inch diameter (0-15 cm depth samples) and unspecified diameter (15-120 cm depth samples)	Minimum 4 inch diameter (0-15 cm depth samples) and unspecified diameter (15-120 cm depth samples)
Method of sample processing, if any	Composited by depth and replicate, and homogenized prior to analysis	Composited by depth and replicate, and homogenized prior to analysis	Composited by depth and replicate, and homogenized prior to analysis
Storage conditions	Frozen	Frozen	Frozen
Storage length (days)	588 days	588 days	588 days

Data obtained from pp. 12-13, 16, 18, and Appendix B, pp. 73-75, in the study report.

**9. Analytical Procedures:** Soil samples were analyzed for BAS 510 F and the degradates 2-chloronicotinic acid and 2-hydroxy-N-(4'-chlorobiphenyl-2-yl)nicotinamide (M510F49) using BASF Draft Analytical Method D0004/1 (p. 16). Soil samples were extracted by shaking with methanol followed by methanol:water (50:50, v:v). An aliquot of the extract was then diluted with a buffer solution (water with 0.1% formic acid and 4 mM ammonium formate) prior to HPLC-MS/MS analysis. The limit of quantitation for each analyte was 0.010 mg/kg (p. 17). Mean recoveries of BAS 510 F, 2-chloronicotinic acid, and 2-hydroxy-N-(4'-chlorobiphenyl-2-yl)nicotinamide from concurrent fortification samples (prepared at each test site) ranged from 92-100% for BAS 510 F, 101 to 106% for 2-chloronicotinic acid and 88 to 97% for 2-hydroxy-N-(4'-chlorobiphenyl-2-yl)nicotinamide, and indicated that the method was adequate (p. 17).

## II. RESULTS AND DISCUSSION

**1. APPLICATION MONITORS:** The mean recoveries from the field application monitors placed in the test plots were 90-101%, 87-106% and 79-96% of the target for the California, Idaho, and Florida test plots, respectively (data are reported as ranges of the mean recoveries from applications 1, 3 and 6; Table I, p. 25).

**2. RECOVERY FROM FIELD SPIKES:** The mean recoveries of BAS 510 F from the field spiked samples (across all fortification events) were  $96 \pm 6.7\%$ ,  $87 \pm 5.7\%$ , and  $97 \pm 5.7\%$  of the



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applied for the samples fortified at the California, Idaho, and Florida field sites, respectively (Appendix E, p. 399). Field spiked samples were not prepared for the degradates, 2-chloronicotinic acid and 2-hydroxy-N-(4'-chlorobiphenyl-2-yl)nicotinamide.

**3. MASS ACCOUNTING:** A mass balance was not determined.

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Table 8. Concentration of BAS 510 F residues expressed as mg/kg soil, in the California plot.

Compound	Soil depth (cm)	Sampling times (application number or days following previous application)													
		App1	1	2	3	5	6	App2	7	App3	7	App4	7	App5	7
Parent compound (BAS 510 F)	0-7.5	0.28	0.41	0.31	0.24	0.26	0.24	0.56	0.45	0.84	0.70	1.04	0.85	1.44	1.46
	7.5-15	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	15-30	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	30-45	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Transformation product (2-chloronicotinic acid)	0-7.5	<0.01	<0.01	<0.01	<0.01	0.003	0.003	0.01	0.007	0.01	0.01	0.02	0.02	0.02	0.03
	7.5-15	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	15-30	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	30-45	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Transformation product (2-hydroxy-N-(4-chlorobiphenyl-1-yl)nicotinamide)	0-7.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.007	<0.01	0.01	0.003	0.01	0.003	0.02	0.02
	7.5-15	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	15-30	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	30-45	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total extractable residues (if determined)	0-7.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	7.5-15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	15-30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	30-45	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total non-extractable residues (if determined)	0-7.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	7.5-15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	15-30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	30-45	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total recovery	0-7.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

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Compound	Soil depth (cm)	Sampling times (application number or days following previous application)													
		App1	1	2	3	5	6	App2	7	App3	7	App4	7	App5	7
	7.5-15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	15-30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	30-45	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Compound	Soil depth (cm)	Sampling times (application number or days following previous application)													
		App6	1	2	3	5	7	14	21	30	61	90	120	181	272
Parent compound (BAS 510 F)	0-7.5	1.78	1.67	1.40	1.26	1.26	1.29	1.28	1.12	1.37	1.04	0.83	0.96	1.20	0.91
	7.5-15	0.01	<0.01	<0.01	0.007	<0.01	<0.01	0.10	<0.01	<0.01	0.03	<0.01	0.01	0.007	<0.01
	15-30	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	30-45	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Transformation product (2-chloronicotinic acid)	0-7.5	0.03	0.02	0.02	0.02	0.02	0.03	0.02	0.04	0.04	<0.01	0.01	0.003	<0.01	0.003
	7.5-15	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.003	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	15-30	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	30-45	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Transformation product (2-hydroxy-N-(4-chlorobiphenyl-1-yl)nicotinamide)	0-7.5	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.007	0.01	0.01	<0.01	0.01	0.01	0.003
	7.5-15	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	15-30	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	30-45	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total extractable residues (if determined)	0-7.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	7.5-15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	15-30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	30-45	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

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Compound	Soil depth (cm)	Sampling times (application number or days following previous application)														
		App6	1	2	3	5	7	14	21	30	61	90	120	181	272	329
Total non-extractable residues (if determined)	0-7.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	7.5-15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	15-30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	30-45	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total recovery	0-7.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	7.5-15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	15-30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	30-45	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Data obtained from Tables XI-XIII pp. 40-51

Data obtained from Tables XI-XIII, pp. 49-51.

Reported values are registrant-calculated averages of three replicates. In instances where there was a non-detect in one or more of the replicates, the registrant used the value zero in place of each non-detect in their calculation to determine the mean, thus resulting in some mean values that are below the LOD (0.01 mg/kg).

ND = Not determined

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Table 9. Concentration of BAS 510 F residues expressed as mg/kg soil, in the Idaho plot.

Compound	Soil depth (cm)	Sampling times (application number or days following previous application)													
		App1	1	2	3	5	6	App2	7	App3	7	App4	7	App5	7
Parent compound (BAS 510 F)	0-7.5	0.38	0.35	0.33	0.33	0.31	0.35	0.74	0.63	1.06	1.08	1.33	1.30	1.79	1.79
	7.5-15	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.007	<0.01	<0.01	<0.01	<0.01	<0.01	0.003	<0.01
	15-30	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	30-45	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Transformatio n product (2- chloronicotinic acid)	0-7.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.003	0.003	0.007	<0.01	<0.01	<0.01	0.007	<0.01
	7.5-15	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	15-30	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	30-45	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Transformatio n product (2- hydroxy-N-(4'- chlorobipheny l-2-yl) nicotinamide)	0-7.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01	0.02	0.02	0.02	0.02
	7.5-15	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	15-30	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	30-45	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total extractable residues (if determined)	0-7.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	7.5-15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	15-30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	30-45	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total non- extractable residues (if determined)	0-7.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	7.5-15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	15-30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	30-45	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total recovery	0-7.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

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Compound	Soil depth (cm)	Sampling times (application number or days following previous application)													
		App1	1	2	3	5	6	App2	7	App3	7	App4	7	App5	7
	7.5-15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	15-30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	30-45	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Compound	Soil depth (cm)	Sampling times (application number or days following previous application)													
		App6	1	2	3	5	7	14	21	30	60	90	166	186	345
Parent compound (BAS 510 F)	0-7.5	2.23	2.33	2.62	2.77	2.27	2.10	2.06	2.29	2.10	1.65	1.67	2.18	1.73	1.57
	7.5-15	0.007	<0.01	0.003	0.01	<0.01	0.007	0.003	0.02	0.02	<0.01	<0.01	0.02	0.03	0.03
	15-30	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01
	30-45	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Transformatio n product (2- chloronicotinic acid)	0-7.5	0.01	0.01	0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	7.5-15	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.002	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	15-30	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	30-45	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Transformatio n product (2- hydroxy-N-(4'- chlorobipheny l-2-yl) nicotinamide)	0-7.5	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.03	0.02	0.02
	7.5-15	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	15-30	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	30-45	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total extractable residues (if determined)	0-7.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	7.5-15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	15-30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	30-45	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

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Compound	Soil depth (cm)	Sampling times (application number or days following previous application)														
		App6	1	2	3	5	7	14	21	30	60	90	166	186	269	345
Total non-extractable residues (if determined)	0-7.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	7.5-15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	15-30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	30-45	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total recovery	0-7.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	7.5-15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	15-30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	30-45	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Data obtained from Tables XIV-XVI, pp. 52-54

Data obtained from Tables XIV-XVI, pp. 52-54.

Reported values are registrant-calculated averages of three replicates. In instances where there was a non-detect in one or more of the replicates, the registrant used the value zero in place of each non-detect in their calculation to determine the mean, thus resulting in some mean values that are below the LOD (0.01 mg/kg).  
ND = Not determined

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Table 10. Concentration of BAS 510 F residues expressed as mg/kg soil, in the Florida plot.

Compound	Soil depth (cm)	Sampling times (application number or days following previous application)														
		App1	1	2	3	5	6	App2	7	App3	7	App4	7	App5	7	App6
Parent compound (BAS 510 F)	0-7.5	0.25	0.26	0.16	0.16	0.13	0.14	0.38	0.50	0.43	0.44	0.81	0.55	0.88	0.78	1.18
	7.5-15	0.02	0.02	0.03	0.03	0.02	0.04	0.04	0.08	0.05	0.05	0.12	0.12	0.10	0.07	0.10
	15-30	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	0.005	<0.01	<0.01	<0.01	<0.01	0.003
	30-45	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	45-60	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Transformation product (2-chloronicotinic acid)	0-7.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	7.5-15	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	15-30	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	30-45	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Transformation product (2-hydroxy-N-(4-chlorobiphenyl-1-2-yl) nicotinamide)	0-7.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.003	0.01	0.01	0.02
	7.5-15	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	15-30	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	30-45	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total extractable residues (if determined)	0-7.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	7.5-15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	15-30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	30-45	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total non-extractable residues (if determined)	0-7.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	7.5-15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	15-30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	30-45	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND



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Compound	Soil depth (cm)	Sampling times (application number or days following previous application)															
		App1	1	2	3	5	6	App2	7	App3	7	App4	7	App5	7	App6	
Total recovery	0-7.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	7.5-15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	15-30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	30-45	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Compound	Soil depth (cm)	Sampling times (application number or days following previous application)															
		1	2	3	5	7	14	21	30	60	91	120	180	270	360	384	
Parent compound (BAS 510 F)	0-7.5	1.26	0.83	0.74	0.82	0.61	0.88	0.67	0.47	0.44	0.38	0.32	0.22	0.24	0.14	0.13	
	7.5-15	0.18	0.17	0.17	0.14	0.08	0.32	0.23	0.13	0.21	0.29	0.17	0.20	0.16	0.54	0.12	
	15-30	<0.01	<0.01	0.003	<0.01	<0.01	0.01	0.02	0.007	0.03	0.06	0.05	0.06	0.03	0.02	0.05	
	30-45	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.003	0.01	<0.01	0.007	<0.01	<0.01	0.007	
	45-60	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Transformation product (2-chloronicotinic acid)	0-7.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
	7.5-15	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
	15-30	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
	30-45	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Transformation product (2-hydroxy-N-(4-chlorobiphenyl-1-yl)nicotinamide)	0-7.5	0.02	0.01	0.007	0.01	0.003	0.02	0.01	0.007	0.01	0.01	0.003	0.007	0.01	<0.01	0.003	
	7.5-15	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
	15-30	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
	30-45	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Total extractable residues (if determined)	0-7.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	7.5-15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	

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Compound	Soil depth (cm)	Sampling times (application number or days following previous application)														
		1	2	3	5	7	14	21	30	60	91	120	180	270	360	384
Total non-extractable residues (if determined)	15-30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	30-45	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	0-7.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	7.5-15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total recovery	15-30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	30-45	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	0-7.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	7.5-15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total recovery	15-30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	30-45	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Data obtained from Tables XVII-XIX, pp. 55-57.

Reported values are registrant-calculated averages of three replicates. In instances where there was a non-detect in one or more of the replicates, the registrant used the value zero in place of each non-detect in their calculation to determine the mean, thus resulting in some mean values that are below the LOD (0.01 mg/kg).

ND = Not determined

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**4. PARENT COMPOUND:** At the California site, the maximum measured concentration following the sixth application (day 0) was 0.32 mg a.i./kg soil (after adjusting for the concentration present immediately prior to the sixth application), which is 58.2% of the applied rate (reviewer-calculated based on the registrant-calculated zero-time core concentration, 0.55 mg/kg, reported in Table II, p. 25). BAS 510 F was detected in the 0-7.5 cm depth at 0.28 mg a.i./kg soil following the first application, 0.56 mg a.i./kg soil following the second application, 0.84 mg a.i./kg soil following the third application, 1.04 mg a.i./kg soil following the fourth application, 1.44 mg a.i./kg soil following the fifth application, and 1.46 mg a.i./kg soil at 7 days posttreatment of the fifth application (just prior to the sixth application; Table XI, p. 49). Following the sixth application, BAS 510 F was detected in the 0-7.5 cm depth at a maximum of 1.78 mg a.i./kg soil at day 0, decreased to 0.83-1.20 mg a.i./kg soil by 61 to 272 days, and was 0.51 mg a.i./kg soil at 329 days posttreatment (the last sampling interval). BAS 510 F was detected in the 7.5-15 cm depth at a maximum of 0.10 mg a.i./kg soil at 14 days following the sixth application and was not detected above 0.03 mg a.i./kg soil at any other sampling interval. BAS 510 F was not detected below the 7.5-15 cm depth.

At the Idaho site, the maximum measured concentration following the sixth application (day 3) was 0.98 mg a.i./kg soil (after adjusting for the concentration present immediately prior to the sixth application), which is 178% of the applied rate (reviewer-calculated based on the registrant-calculated zero-time core concentration, 0.55 mg/kg, reported in Table II, p. 25). BAS 510 F was detected in the 0-7.5 cm depth at 0.38 mg a.i./kg soil following the first application, 0.74 mg a.i./kg soil following the second application, 1.06 mg a.i./kg soil following the third application, 1.33 mg a.i./kg soil following the fourth application, 1.79 mg a.i./kg soil following the fifth application, and 1.79 mg a.i./kg soil at 7 days posttreatment of the fifth application (just prior to the sixth application; Table XIV, p. 52). Following the sixth application, BAS 510 F was detected in the 0-7.5 cm depth at a maximum of 2.77 mg a.i./kg soil at 3 days, decreased to 1.57-1.73 mg a.i./kg soil by 60 to 269 days with the exception of 166 days when BAS 510 F was detected at 2.18 mg a.i./kg soil, and was 1.32 mg a.i./kg soil at 345 days posttreatment (the last sampling interval). BAS 510 F was detected in the 7.5-15 cm depth at a maximum of 0.03 mg a.i./kg soil at 186, 269, and 345 days following the sixth application and was only detected once in the 15-30 cm depth at 0.02 mg a.i./kg soil at 30 days posttreatment of the final application.

At the Florida site, the maximum measured concentration following the sixth application (day 1) was 0.48 mg a.i./kg soil (after adjusting for the concentration present immediately prior to the sixth application), which is 87.3% of the applied rate (reviewer-calculated based on the registrant-calculated zero-time core concentration, 0.55 mg/kg, reported in Table II, p. 25). BAS 510 F was detected in the 0-7.5 cm depth at 0.25 mg a.i./kg soil following the first application, 0.38 mg a.i./kg soil following the second application, 0.43 mg a.i./kg soil following the third application, 0.81 mg a.i./kg soil following the fourth application, 0.88 mg a.i./kg soil following the fifth application, and 0.78 mg a.i./kg soil at 7 days posttreatment of the fifth application (just prior to the sixth application; Table XVII, p. 55). Following the sixth application, BAS 510 F was detected in the 0-7.5 cm depth at a maximum of 1.26 mg a.i./kg soil at 1 day, decreased to 0.74-0.83 mg a.i./kg soil by 2 to 5 days and 0.44-0.47 mg a.i./kg soil by 30 to 60 days, was 0.22-0.24 mg a.i./kg soil at 180-270 days, and was 0.13 mg a.i./kg soil at 384 days posttreatment (the last sampling interval). BAS 510 F was detected in the 7.5-15 cm depth at 0.02-0.12 mg a.i./kg soil prior to the sixth application and at 0.08-0.54 mg a.i./kg soil following the sixth application

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(maximum value occurred at 360 days). BAS 510 F was detected in the 7.5-15 cm depth at all intervals following 14 days posttreatment of the sixth application, and was a maximum of 0.06 mg a.i./kg soil at 91 and 180 days posttreatment. BAS 510 F was only detected in the 30-45 cm depth at 0.003-0.01 mg a.i./kg soil at 60, 91, 180, and 384 days following the final application.

The 50% dissipation times (DT50) of BAS 510 F in soil under terrestrial field conditions using non-linear regression (using the Gustafson/Holden equation; pp. 18-21, Table III, p. 26, Figures 4-6, pp. 27-28), and the calculated half-life for the California site, were:

California	DT50 = 76.5 days (half-life 289 days)	DT75 = >329 days
Idaho	DT50 = 333 days	DT75 = >345 days
Florida	DT50 = 27 days	DT75 = >384 days

The dissipation pattern was not clear due to temporal and inter-replicate data variability. The reported DT50 values for the California and Idaho test sites were of questionable value due to temporal and inter-replicate data variability. The calculated half-life of 289 days is considered to be more representative of the observed dissipation at the California site. For the Idaho site, the DT50 value appears to adequately represent the observed dissipation better than the calculated half-life of 462 days ( $r^2 = 0.57$ ); therefore, the DT50 value will be used in the fate assessment.

**5. TRANSFORMATION PRODUCTS:** The transformation products detected in the California test plot were 2-chloronicotinic acid and 2-hydroxy-N-(4'-chlorobiphenyl-2-yl)nicotinamide (M510F49), with maximum concentrations of 0.04 mg/kg and 0.02 mg/kg (1.6% and 0.78% of the applied amount, respectively), both observed following the sixth application in the 0-7.5 cm soil layer (Tables XII-XIII, pp. 50-51). 2-chloronicotinic acid was detected at 0.007 mg/kg at the end of the study period while 2-hydroxy-N-(4'-chlorobiphenyl-2-yl)nicotinamide was not detected.

The transformation products detected in the Idaho test plot were 2-chloronicotinic acid and 2-hydroxy-N-(4'-chlorobiphenyl-2-yl)nicotinamide (M510F49), with maximum concentrations of 0.01 mg/kg and 0.03 mg/kg (0.39% and 1.2% of the applied amount, respectively), both observed following the sixth application in the 0-7.5 cm soil layer (Tables XV-XVI, pp. 53-54). 2-hydroxy-N-(4'-chlorobiphenyl-2-yl)nicotinamide was detected at 0.02 mg/kg at the end of the study period while 2-chloronicotinic acid was not detected.

The transformation product detected in the Florida test plot was 2-hydroxy-N-(4'-chlorobiphenyl-2-yl)nicotinamide (M510F49), with a maximum concentration of 0.02 mg/kg (0.78% of the applied amount), observed following the sixth application in the 0-7.5 cm soil layer (Tables XVIII-XIX, pp. 56-57). 2-hydroxy-N-(4'-chlorobiphenyl-2-yl)nicotinamide was detected at 0.003 mg/kg at the end of the study period.

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Table 11: Chemical names and CAS numbers for the transformation products of BAS 510 F.

Applicant's Code Name	CAS Number	CAS and/or IUPAC Chemical Name(s)	Chemical formula	Molecular weight	SMILES string
CNA		2-chloronicotinic acid	$C_6H_4ClNO_2$	157.56	
M510F49		2-hydroxy-N-(4'-chlorobiphenyl-2-yl)nicotinamide	$C_{18}H_{13}ClN_2O_2$	324.77	

### 6. EXTRACTABLE AND NON-EXTRACTABLE RESIDUES: Non-extractable residues were not measured.

Table 12: Dissipation routes of BAS 510 F under field conditions.

Route of dissipation	% of applied amount (at the end of study period)		
	California test site	Idaho test site	Florida test site
Accumulation (residues ) in soil/ carry over <sup>1</sup>	19.9%	52.3%	11.9%
Transformation (% of transformation products) <sup>1</sup>	0.3%	0.8%	0.1%
Leaching, if measured	Did not leach beyond 15 cm	Did not leach beyond 30 cm	Did not leach beyond 45 cm
Volatilization, if measured	Not measured	Not measured	Not measured
Plant uptake, if measured	N/A	N/A	N/A
Runoff, if measured	Not measured	Not measured	Not measured
Total			

<sup>1</sup> Accumulation in soil and transformation were calculated by the reviewer by dividing the total parent BAS 510 F residues at the end of the study period or the total transformation products at the end of the study period by the total application rate (2.58 lb a.i./A).

### 7. VOLATILIZATION: The concentration of applied BAS 510 F lost through volatilization was not determined.

### 8. PLANT UPTAKE: N/A

**9. LEACHING:** BAS 510 F did not leach below 15 cm in the California test plot, 30 cm in the Idaho test plot, and 45 cm in the Florida test plot (Tables XI, XIV, and XVII, pp. 49, 52, and 55). Maximum concentrations of BAS 510 F were 1.26-2.77 mg a.i./kg soil in the 0-7.5 cm depth, 0.03-0.54 mg a.i./kg soil in the 7.5-15 cm depth, 0.02-0.06 mg a.i./kg soil in the 15-30 cm depth (Idaho and Florida test plots only), and 0.01 mg a.i./kg soil in the 30-45 cm depth (Florida test plot only). The transformation products 2-chloronicotinic acid and 2-hydroxy-N-(4'-chlorobiphenyl-2-yl)nicotinamide did not leach beyond the 0-15 cm layer (Tables XII, XIII, XV, XVI, XVIII, and XIX, pp. 50, 51, 53, 54, 56, and 57). TDR water flux measurements indicated that recharge occurred in all three test plots at the four foot depth (Figures 11-13, pp. 33-35).

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**10. Runoff:** Runoff was not studied.

**11. RESIDUE CARRYOVER:** DT75 values were outside of the study period (329-384 days) for each test site (Table III, p. 26). After 329-384 days, 19.9%, 52.3%, and 11.9% of the total applied parent compound (2.58 mg/kg, based on the registrant-calculated concentration for a single application, reported as 0.55 mg/kg for the final two applications; Table II, p. 25) was detected in the California, Idaho, and Florida test plots, and has the potential to carryover into the following season. No transformation products were detected above 1% at the end of the study period at any of the test sites.

**12. SUPPLEMENTARY STUDY RESULTS:** Based on data reported in the method validation study **MRID 45405225**, using BASF Method D0004, mean recoveries of BAS 510 F were 96%, 97%, and 94% for the 0.01, 0.1, and 1.0 ppm fortifications, respectively, and mean recoveries of 2-chloronicotinic acid were 92%, 88%, and 87% for the 0.01, 0.1, and 1.0 ppm fortifications, respectively (Appendix E, Table VIII, p. 106). Using BASF Method D0004/1, mean recoveries of BAS 510 F were 96%, 95%, and 94% for the 0.01, 0.1, and 1.0 ppm fortifications, respectively, mean recoveries of 2-chloronicotinic acid were 93%, 96%, and 88% for the 0.01, 0.1, and 1.0 ppm fortifications, respectively, and mean recoveries of 2-hydroxy-N-(4'-chlorobiphenyl-2-yl)nicotinamide were 88%, 91%, and 92% for the 0.01, 0.1, and 1.0 ppm fortifications, respectively (Table III, p. 28). Results were not reported for 1-(4-chlorophenyl)-2-aminobenzene because they do not pertain to the study under review. Based on data reported in the independent method validation study **MRID 45405226**, using BASF Method D0004/1, mean recoveries of BAS 510 F were 82% and 95% for the 0.01 and 0.10 mg/kg fortifications, respectively, mean recoveries of 2-chloronicotinic acid were 91% and 94% for the 0.01 and 0.10 mg/kg fortifications, respectively, and mean recoveries of 2-hydroxy-N-(4'-chlorobiphenyl-2-yl)nicotinamide were 84% and 91% for the 0.01 and 0.10 mg/kg fortifications, respectively (Table 1, p. 16).

Based on data reported in the storage stability study **MRID 45405224**, diphenyl ring-labeled <sup>14</sup>C-BAS 510 F was stable in soil treated at a concentration of 0.930 mg/kg and stored frozen for up to 2 years. Mean recoveries (from duplicate replicates) ranged from 98.5% to 106.9% throughout the storage period (Table 2, p. 19). Based on data reported in the storage stability study **MRID 45405223**, BAS 510 F and 2-chloronicotinic acid were stable in soil treated at 0.1 ppm and stored frozen for up to 6 months. Recoveries of both compounds ranged from 88% to 105% throughout the storage period (Tables I.A-I.B, pp. 23-24). Recoveries of 2-hydroxy-N-(4'-chlorobiphenyl-2-yl)nicotinamide decreased from 99-111% at day 0 to 70-76% by 1 month and 75-84% by 3 months posttreatment (Tables II.A-II.B, p. 25).

**III. STUDY DEFICIENCIES:** No deficiencies were noted other than the observed data variability.

**IV. REVIEWER'S COMMENTS:**

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1. The major routes of dissipation of BAS 510 F under terrestrial field conditions at the three test sites could not be determined from the data provided in this report. Leaching was minimal and the major transformation products did not show a pattern of accumulation. Volatilization and runoff were not measured. Based on laboratory studies that demonstrated that the transformation of BAS 510 F resulted primarily from bound residue and CO<sub>2</sub> formation, it is assumed that these were also the predominant dissipation processes in the field. However, calculated half-lives for the California and Idaho sites were of questionable value due to temporal and inter-replicate data variability.
2. The registrant-calculated DT50 of BAS 510 F at the Florida test plot was 27 days, and was comparable to the observed half-life and the calculated half-life (30.5 days,  $r^2 = 0.41$ , calculated using linear regression, 0-30 day data). The registrant-calculated DT50s of BAS 510 F at the California and Idaho test plots were 76.5 days and 333 days, respectively, and were significantly more rapid than the corresponding calculated half-life values of 289 days ( $r^2 = 0.52$ ) and 462 days ( $r^2 = 0.57$ ) which were calculated using linear regression (all available data). The reviewer notes that data from both of these test plots were variable between replicates and over time. The reviewer also notes that the DT50's were calculated based on the total residue concentration per sampling period (all soil depths) and that the calculated half-lives were calculated based on only the top 0-7.5 cm soil depth. The calculated half-life of 289 days is considered to be more representative of the observed dissipation at the California site. For the Idaho site, the DT50 value appears to adequately represent the observed dissipation better than the calculated half-life of 462 days ( $r^2 = 0.57$ ); therefore, the DT50 value will be used in the fate assessment.
3. The study authors stated that the degradation of BAS 510 F is primarily a function of soil microbial activity, and accurately predicted half-life values (within a variance of 4-20 days) at the California and Idaho test sites using a model based on the accumulation of soil heat units (pp. 22-24). Results were reported in Table IV (p. 31) and shown graphically in Figure 10 (p. 30). The predicted half-life for the Florida test site was approximately twice the calculated value (27 days vs. 55 days), however, the study authors stated that the ability of the heat unit model to predict the half-life of the parent compound will diminish if dispersion occurs.
4. Evapotranspiration data were reported for each test location in lieu of pan evaporation data.
5. BAS 510 F chemical name 2-chloro-*N*-(4'-chlorobiphenyl-2-yl)-nicotinamide, as presented in the study report, was identified as the IUPAC name by the Compendium of Pesticide Common Names (<http://www.hclrss.demon.co.uk/nicobifen.html>). The CAS name 2-chloro-*N*-(4-chloro[1,1-biphenyl]-2-yl)-3-pyridinecarboxamide was also obtained from the Compendium of Pesticide Common Names. The following BAS 510 F synonyms were obtained from USEPA/OPP Chemical Databases (<http://www.cdpr.ca.gov/cgi-bin/epa/chemidetriris.pl?pccode=128008> and ([http://www.cdpr.ca.gov/cgi-bin/mon/bycode.pl?p\\_chemcode=5790](http://www.cdpr.ca.gov/cgi-bin/mon/bycode.pl?p_chemcode=5790)): 2-chloro-*N*-(4'-chlorobiphenyl-2-yl)-nicotinamide, nicobifen, and BAS 516 02 F.

## Data Evaluation Report on the terrestrial field dissipation of BAS 510 F

PMRA Submission Number {.....}

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### V. REFERENCES:

1. Ebert, D. 2000. Degradation of BAS 510 F in aerobic aquatic environment. BASF AG. Limburgerhof, Germany. BASF Reg. Doc. No. 2000/1000135. 84 pp.
2. Ebert, D., U. Harder. 2000. Degradation of  $^{14}\text{C}$ -chloronicotinic acid (Reg. No. 107371) in soil under aerobic conditions. BASF AG. Limburgerhof, Germany. BASF Reg. Doc. No. 2000/1013280. 30 pp.
3. Gustafson, D. I. and L. Holden. 1990. Non-linear pesticide dissipation in soil: A new model based on spatial variability. Environ. Sci. Technol., Vol. 24, No. 7, pp. 1032-1038.
4. Microcal. 2000. Origin 6.0®: Data analysis and plotting software, Microcal™ Software, Inc., Northhampton, MA.
5. Rawls, W. J., D. L. Brakensiek, and K. E. Saxton. 1982. Estimation of soil water properties. Transactions ASAE Paper No. 81-2510, pp. 1316-1320.
6. Saha, M. 2000. BASF Draft Analytical Method D0004: "The determination of BAS 510 F and its metabolites, in soil using LC-MS". BASF Corporation, Research Triangle Park, NC.
7. Scharf, J. 1998. Hydrolysis of BAS 510 F at 90°C, 100°C and 120°C. BASF AG. Limburgerhof, Germany. BASF Reg. Doc. No. 98/10878. 18 pp.
8. Seher, A. 1998. Soil adsorption / desorption of 300 355 (BAS 510 F). BASF AG. Limburgerhof, Germany. BASF Reg. Doc. No. 98/10513. 63 pp.
9. Snedecor, G. W. and W. G. Cochran. 1987. Statistical Methods. The Iowa State University Press, Ames IA USA.
10. Sparks, D. L. 1989. Kinetics of Soil Chemical Processes. Academic Press, San Diego, CA - USA.
11. Staudenmaier, H. and C. Schafer. 2000. Anaerobic metabolism of BAS 510 F in soil (diphenyl- $^{14}\text{C}$ -label). BASF AG. Limburgerhof, Germany. BASF Reg. Doc. No. 2000/1014986. 56 pp.
12. Stephan, A. 1999. Metabolism of BAS 510 F ( $^{14}\text{C}$ -diphenyl and  $^{14}\text{C}$ -pyridin) in soil under aerobic conditions. BASF AG. Limburgerhof, Germany. BASF Reg. Doc. No. 1999/11807. 104 pp.
13. von Gotz, N. 1999. Aqueous photolysis of BAS 510 F. BASF AG. Limburgerhof, Germany. BASF Reg. Doc. No. 1999/ 11804. 27 pp.



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14. von Gotz, N. 1999. Hydrolysis of BAS 510 F. BASF AG. Limburgerhof, Germany. BASF Reg. Doc. No. 1999/11285. 20 pp.
15. von Gotz, N. 2000. Soil photolysis of BAS 510 F. BASF AG. Limburgerhof, Germany. BASF Reg. Doc. No. 2000/1014989. 36 pp.
16. Wolt, J. D. 1994a. Soil Solution Chemistry. John Wiley and Sons, Inc., New York, NY - USA.
17. Wolt, J. D., H. P. Nelson, Jr., C. B. Cleveland, and I. J. van Wesenbeeck. 2000. Biodegradation kinetics for pesticide exposure assessment. Reviews of environmental contamination and toxicology.

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Page      is not included in this copy.

Pages 33 through 34 are not included in this copy.

The material not included contains the following type of information:

- ☐ Identity of product inert ingredients.
- ☐ Identity of product impurities.
- ☐ Description of the product manufacturing process.
- ☐ Description of quality control procedures.
- ☐ Identity of the source of product ingredients.
- ☐ Sales or other commercial/financial information.
- ☐ A draft product label.
- ☐ The product confidential statement of formula.
- ☐ Information about a pending registration action.
- ☒ FIFRA registration data.
- ☐ The document is a duplicate of page(s)     .
- ☐ The document is not responsive to the request.

The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.

Chemical Name  
PC Code  
MRID  
Guideline No.

BAS 510 F  
128008  
45405220  
164-1

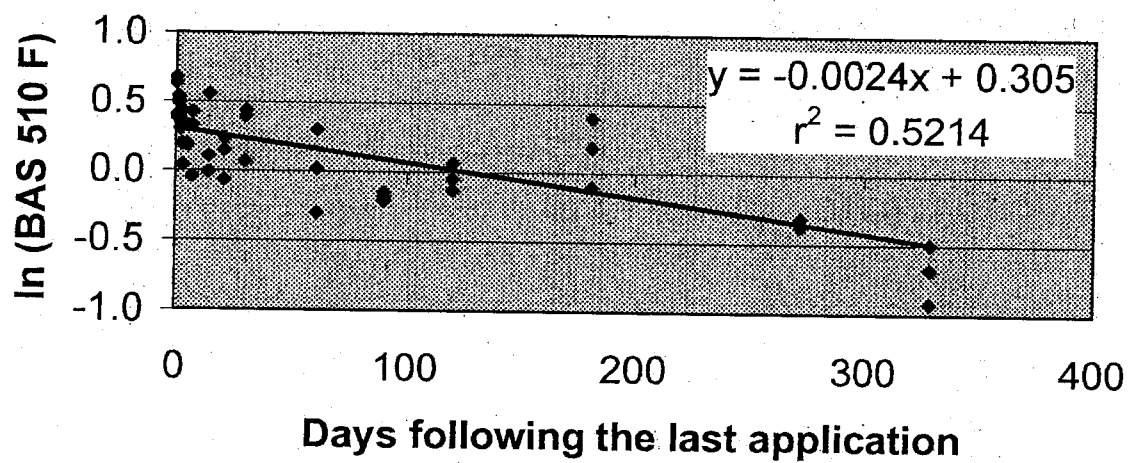
California

Half-life (days) = 288.8

Days posttreatment of the last application	BAS 510 F (mg/kg)	Ln (BAS 510 F)
0	1.48	0.392
0	1.96	0.673
0	1.89	0.637
1	1.71	0.536
1	1.63	0.489
1	1.66	0.507
2	1.44	0.365
2	1.35	0.300
2	1.41	0.344
3	1.54	0.432
3	1.04	0.039
3	1.21	0.191
5	1.20	0.182
5	1.21	0.191
5	1.38	0.322
7	1.53	0.425
7	0.96	-0.041
7	1.39	0.329
14	0.99	-0.010
14	1.74	0.554
14	1.11	0.104
21	1.16	0.148
21	1.26	0.231
21	0.94	-0.062
30	1.55	0.438
30	1.07	0.068
30	1.48	0.392
61	1.02	0.020
61	0.74*	-0.301
61	1.35	0.300
90	0.83	-0.186
90	0.81	-0.211
90	0.86	-0.151
120	0.95	-0.051
120	1.06	0.058
120	0.88	-0.128
181	1.20	0.182
181	1.49	0.399
181	0.90	-0.105
272	1.31	0.270
272	0.73	-0.315
272	0.69	-0.371
329	0.51	-0.673
329	0.61	-0.494
329	0.40	-0.916

\* Reviewer-calculated average of two replicates

### Dissipation of BAS 510 F from the California bare-ground plot



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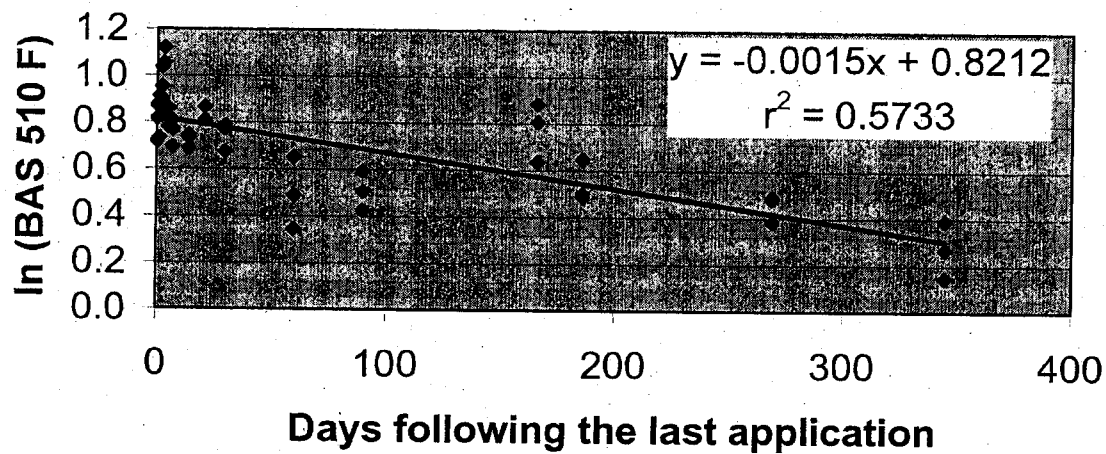
Idaho

Half-life (days) = 462.1

Days posttreatment of the last application	BAS 510 F (mg/kg)	Ln (BAS 510 F)
0	2.26	0.815
0	2.39	0.871
0	2.05	0.718
1	2.08	0.732
1	2.49	0.912
1	2.42	0.884
2	2.45	0.896
2	2.82	1.037
2	2.59	0.952
3	2.37	0.863
3	3.07	1.122
3	2.87	1.054
5	2.36	0.859
5	2.28	0.824
5	2.18	0.779
7	2.00	0.693
7	2.16	0.770
7	2.15	0.765
14	1.99	0.688
14	2.08	0.732
14	2.11	0.747
21	2.38*	0.867
21	2.25*	0.811
21	2.25*	0.811
30	2.20*	0.788
30	1.96*	0.673
30	2.16*	0.770
60	1.63*	0.489
60	1.92*	0.652
60	1.41*	0.344
90	1.53*	0.425
90	1.81*	0.593
90	1.66*	0.507
166	2.24*	0.806
166	1.89*	0.637
166	2.42*	0.884
186	1.65*	0.501
186	1.91*	0.647
186	1.63*	0.489
269	1.63*	0.489
269	1.62*	0.482
269	1.47*	0.385
345	1.31	0.270
345	1.48	0.392
345	1.16	0.148

\* Reviewer-calculated average of two replicates

### Dissipation of BAS 510 F from the Idaho bare-ground plot



Chemical Name  
PC Code  
MRID  
Guideline No.

BAS 510 F  
128008  
45405220  
164-1

Florida

Half-life (days) = 30.5

Days posttreatment of the last application	BAS 510 F (mg/kg)	Ln (BAS 510 F)
0	1.39	0.329
0	1.24	0.215
0	0.90*	-0.105
1	1.31	0.270
1	1.20	0.182
2	0.66	-0.416
2	0.91	-0.094
2	0.92	-0.083
3	0.61	-0.494
3	0.82	-0.198
3	0.78	-0.248
5	0.61	-0.494
5	0.99	-0.010
5	0.87	-0.139
7	0.61	-0.494
7	0.57	-0.562
7	0.66	-0.416
14	1.13*	0.122
14	0.63*	-0.462
14	0.90*	-0.105
21	0.51	-0.673
21	0.86	-0.151
21	0.65	-0.431
30	0.28*	-1.273
30	0.59	-0.528
30	0.53	-0.635
60	0.32*	-1.139
60	0.44*	-0.821
60	0.58*	-0.545
91	0.38	-0.968
91	0.33	-1.109
91	0.44	-0.821
120	0.44	-0.821
120	0.32	-1.139
120	0.20	-1.609
180	0.15	-1.897
180	0.15	-1.897
180	0.37*	-0.994
270	0.25	-1.386
270	0.25	-1.386
270	0.23	-1.470
360	0.15	-1.897
360	0.14	-1.966
360	0.12	-2.120

Days posttreatment of the last application	BAS 510 F (mg/kg)	Ln (BAS 510 F)
384	0.11	-2.207
384	0.11	-2.207
384	0.17*	-1.772

\* Reviewer-calculated average of two replicates

### Dissipation of BAS 510 F from the Florida bare-ground plot

